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THE CREATIVE-AESTHETIC APPROACH TO SCHOOL READINESS AND MEASURED CREATIVE GROWTH.

BY- TORRANCE, E. PAUL AND OTHERS
GEORGIA UNIV., ATHENS, RES. AND DEV. CTR. IN EDUC.

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IN RESPONSE TO THE OBSERVATION THAT CHILDREN LOSE MUCH OF THEIR IMAGINATIVENESS AND CREATIVENESS AT ABOUT AGE 5 OR DURING THEIR KINDERGARTEN YEAR, A PROGRAM CALLED THE "CREATIVE-AESTHETIC APPROACH TO SCHOOL READINESS" WAS EMPLOYED TO SEE IF IT WOULD PREVENT SUCH A LOSS. THE PROGRAM IS NORMALLY USED WITH PRESCHOOL CHILDREN TO DEVELOP THE BEGINNINGS OF INTELLECTUAL SKILLS WHICH WILL BE OF FUTURE VALUE. IN THE PRESENT STUDY, THIS PROGRAM WAS USED WITH 24 5-YEAR-OLDS IN AN EXPERIMENTAL KINDERGARTEN. AN ORTHODOX KINDERGARTEN CLASS OF 39 CHILDREN WAS THE CONTROL GROUP. ALTHOUGH BOTH KINDERGARTEN PROGRAMS BEGAN IN SEPTEMBER, 1966, A PRETEST WAS NOT ADMINISTERED TO THE EXPERIMENTAL GROUP UNTIL JANUARY, 1967. THE POSTTEST FOR THE EXPERIMENTAL GROUP WAS GIVEN IN MAY, 1967. THE CONTROL GROUP WAS ADMINISTERED ONLY 1 TEST, THE MAY POSTTEST. THE JANUARY AND MAY TESTS CONSISTED OF (1) TORRANCE TESTS OF CREATIVE THINKING, (2) MOTHER GOOSE PROBLEMS TESTS, AND (3) THE STARKWEATHER TEST OF ORIGINALITY. THE RESULTS WERE FIRST ANALYZED TO COMPARE THE SCORES OF THE EXPERIMENTAL GROUP ALONE ON THEIR PRE- AND POSTTESTS. THE CHILDREN IMPROVED ON ALL 9 TESTS, WITH SIGNIFICANT IMPROVEMENT ON 6 OF THEM. A COMPARISON OF THE MAY SCORES OF BOTH THE EXPERIMENTAL AND CONTROL GROUPS SHOWED THAT THE EXPERIMENTAL GROUP SIGNIFICANTLY OUT-PERFORMED THE CONTROLS ON 6 OF THE 8 TESTS ADMINISTERED TO BOTH GROUPS, AND SCORED HIGHER ON THE REMAINING 2 TESTS. IT WAS CONCLUDED THAT THE KINDERGARTEN EXPERIENCE OR THE REACHING OF 5 YEARS OF AGE NEED NOT RESULTS IN SERIOUS DIMINUTION OF A CHILD'S CREATIVITY. (WD)

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E. Paul Torrance, Laura R. Fortson, and Larry E. Orcutt

Research and Development Center

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THE CREATIVE-AESTHETIC APPROACH TO SCHOOL READINESS AND MEASURED CREATIVE GROWTH

It has been a common observation that children lose much of their imaginativeness and creativeness during their kindergarten year or at about age five. It is true that these observations have seldom been documented psychometrically. For example, Susan Nichols Pulsifer (1963) observed that many of the children with whom she worked made up excellent poems and songs at age four or four and one-half but that their original and creative expression ceased entirely at age five soon after they entered kindergarten. While driving beside her in the car, she could occasionally get them to produce songs before age six. After age six, however, she was unable to get them to produce anything original or creative. In a few instances, however, there have been psychometric documentation of these phenomena.

Perhaps the most systematic and careful study of creative or imaginative functioning and development during the pre-school years is that of Elizabeth Andrews (1930) at the University of Iowa Child Study Center. She used a variety of psychometric methods and types of observation and attempted to study an array of types of imagination and creative activity. Three of her tests were presented tachistoscopically with the task of forming new products (transformations). The following kinds of observation were made of the imaginative play of children from two to six: imitation, experimentation, transformation of objects, transformation of animals, acts of sympathy, dramatizations, imaginary playmates, fanciful explanations, fantastic stories, new uses of stories, constructions, new games, exten-

sions of language, appropriate quotations, leadership with plan, and aesthetic appreciation.

On the basis of these data, Andrews found that total imaginative scores are highest between four years and four years, six months, with a sudden drop at about age five when the child enters kindergarten. Ability to redefine, restructure, or recombine reached a peak between three and four years and from then on decreased. Analogy reached a height during the fourth year and declined during the fifth year. "Don't know" responses decreased steadily with chronological age up to five years and then increased somewhat. The more creative types of imagination reached a high point from ages three years, six months to four years, six months, and their lowest ebb during the fifth year.

In a study (Davis and Torrance, 1965) of the characteristics that teachers believe should be encouraged and discouraged, the ideal of nursery and kindergarten teachers diverges quite sharply from the ideal derived from the judgments of a panel of experts on the creative personality. The ratings of the kindergarten and nursery teachers correlated .37 with those of the expert panel compared to correlation coefficients of .66 for art educators, .51 for a broad sample of New York teachers, and .42 for a sample of Minnesota parents. In some respects, these results should have been anticipated because nursery and kindergarten teachers are responsible for the child's first socialization training outside the home. For self-survival, it is necessary that they place emphasis upon obedience, quietness, courtesy, promptness, and the like and discourage adventurousness, independence in judgment, curiosity, and willingness to take risks.

Descriptions of some of the experimental kindergarten programs such as the one by Bereiter and Englemann (1966) would also lead one to predict disruptions in creative functioning and development. Such programs tend to magnify the discontinuities between prior ways of learning and the ways of learning of the school and appear to make little attempt to build upon previously acquired ways of learning. These features are not true of the "Creative-Aesthetic Approach to School Readiness" formulated and elaborated by one of the authors of this report, Laura R. Fortson. The study reported herein represents an attempt to assess the creative growth that occurred among the children undergoing the Creative-Aesthetic experimental treatment from late January and early February to early May (three months) and to compare the functioning of these children in May with that of the children in the control group located at the Beecher Hills School of Atlanta.

Procedures

The Creative-Aesthetic Approach to School Readiness

The concept of the "Creative-Aesthetic Approach to School Readiness" was formulated and elaborated by Laura R. Fortson as a part of the program of research of the Research and Development Center in Educational Stimulation at the University of Georgia. The program was established through the cooperation of the Research and Development Center and the Clarke County Schools.

The creative-aesthetic approach to school readiness aims primarily at developing in pre-school children the beginnings of intellectual skills, abilities and attitudes which are transferable to later learning situations.

Activities are carefully planned to elicit from children maximum amounts of creative thinking, problem solving, fluency of ideas, and fluency in verbal expression, and to develop auditory and visual discrimination. Children are encouraged to offer ideas freely, hazard guesses, test their ideas, and to try to predict possible outcomes.

The intellectual skills vital to the child's subsequent school achievement are identified and encouraged in kindergarten through guided creative activities and games which are both intellectual and aesthetic, yet child-appropriate in that they hold elements of surprise, imaginative delight and self-discovery. Aimed at fostering specific cognitive skills and attitudes, the activities are designed to appeal to the young child's natural curiosities, his desire to explore and experiment and to express his ideas creatively, his sense of wonder and his natural urge to become totally involved intellectually, emotionally and physically in discovering what the work is like.

Children's own compositions furnish materials for beginning reading, phonics games, number games, and dramatizations. Original poems, stories, or "thoughts" are dictated to the teachers who write them on large charts. These become phonics games as children play with words and substitute initial vowels or consonants to form rhyming words or games of visual discrimination.

Number concepts and "sets" are reinforced through music, rhythms and creative dancing. Beginning arithmetic, in addition to being beaten out and danced, is literally "eaten up." After visits to the store children prepare candy mixes, puddings, and jello for later division. They become "flavorably" involved as they help divide four pies, six apples, a dozen

doughnuts, or 48 Easter eggs among 24 children. Candies are arranged in sets (used in new mathematics) and are added and subtracted before youngsters eat them. Tables, rugs, block houses and other objects in the kindergarten are measured, and tulips planted in the fall are furnished happy and repeated measuring in the spring.

Through creative use of art materials and tools, it was hypothesized, young children naturally increase their attention spans and their ability to manage frustration and stress as they attempt to manipulate materials. In persevering to accomplish goals which are uniquely their own and therefore meaningful to them, young children unselfconsciously adopt and practice habits of thought, and learn attitudes toward work, themselves, and others, which make for emotional and social well-being and continuity of development.

The experimental program was carried on with a group of 24 five-year olds under the direction of a teacher and a teacher-aide, a senior at the University of Georgia. The project was under the general supervision of Professor Warren G. Findley, Director of the Research and Development Center. The control school was chosen on the basis of similarity of parental occupations, proportionate racial mixture, facilities, and type of school. The control group consisted of both morning and afternoon groups. The teacher was quite experienced and an aide gave assistance with attendance reports, serving juice, and the like. There was no full-time aide, however. It was the impression of the senior author that the children in the control group were afforded more than the usual amount of freedom, experienced some creative activities, and were generally quite lively. They did seem to be somewhat more restrained than the children in the experimental group.

Instruments for Assessing Creative Functioning

1. Thinking Creatively with Pictures (Torrance Tests of Creative Thinking, Figural Forms A and B)

Each of these standardized batteries consists of three parallel tasks, each designed to tap a somewhat different aspect of creative functioning. The Picture Construction Task is accompanied by the following instructions and is designed to elicit originality and elaboration:

> At the bottom of this page is a piece of colored paper in the form of a curved shape. Think of a picture or an object in which this form would be an important part. Then lift up the piece of colored paper and stick it wherever you want it on the next page, just like you would a postage stamp. Then add lines with pencil or crayon to make your picture.
>
> Try to think of a picture that no one else will think of. Keep adding new ideas to your first idea to make it tell as interesting and as exciting a story as you can.
>
> When you have completed your picture, think up a name or title for it and one of my helpers or I will write it for you.

The stimulus material for the Figure Completion Task consists of ten incomplete figures and is accompanied by the following instructions:

> By adding lines to this and the next page, you can sketch some interesting objects or pictures. Again, try to think of some picture or object that no one else will think of. Try to make it tell as interesting and as complete a story as you can by adding to and building up your first idea. Make up a title for each of your drawings and later we'll help you write them down.

The Repeated Figures Task consists of two pages of figures (parallel lines in Form A and circles in Form B). The instructions for the Circles version are as follows:

> In ten minutes see how many objects or pictures you can make from the circles on this and the next page. The circles should be the main part of whatever you make. With pencil or crayon add lines to the circles to complete your picture. You can place marks inside the circles, on the circles, and outside the circles -- wherever you want in order to make your picture. Try to think of things that no one else will think of. Make as many different pictures or objects as you can and put as many ideas as you can in each one. Make them tell as complete and as interesting a story as you can.

In all administrations of this instrument in the present study, there was an initial warm-up session of about ten minutes in which imaginative responses were obtained to Munari's Elephant's Wish (1959). The test was administered in the classroom group with the usual ten-minute time limit for each of the three tasks. Most of the children had completed their work before time was called. At the end of the administration, the examiner and his assistants interviewed each child to record labels for his responses.

The rationale of the three tasks, reliability and validity data, and comparison group norms are presented in the technical-norms manual for the Torrance Tests of Creative Thinking (Torrance, 1966a). The tests were scored according to the published scoring guides (Torrance, 1966bc). Scores were obtained for fluency, flexibility, originality, and elaboration.

2. Mother Goose Problems Test

The Mother Goose Problems Test is a verbal test of creative thinking ability and consists of problems based on the world-famed Mother Goose rhymes. Each of the two forms consists of two problems each, are administered individually and orally, and are not timed. The children are supplied with booklets containing drawings of the Mother Goose situations and are encouraged to color them while they discuss the problem with the examiner and produce alternative solutions. A guide including a set of standardized encouraging questions was used in the administration (Torrance and Eubank, 1966). The basic questions for Form A are as follows:

1. What are all of the things Mother Hubbard could have done when she found there was no food?
2. What are all the possible things that might have caused Jack and Jill to fall down the hill?

The basic questions for Form B are as follows:

1. What are all the things Bo Peep's sheep might have done when they got lost?
2. What are all of the things that might have happened to the cow after she jumped over the moon?

Responses were scored for fluency, flexibility, and originality according to a previously developed scoring guide.

3. Starkweather Test of Originality

The Starkweather Test of Originality (Starkweather, 1965) was developed and standardized at Oklahoma State University. The testing materials used in the present study were produced under the direction of Dr. Starkweather. The materials for the pre-test or warm-up session consist of six

white styrofoam shapes and are placed before the child. He is asked, "Do you see a piece that looks like something?" and proceeds from there according to standardized guidelines. The test itself is administered by letting the child draw from a box one at a time forty colored styrofoam shapes. There are ten different shapes and each is in four different colors (red, blue, green, and yellow). There are two forms of the test and one was used as a pretest and the other as a posttest. The test is not timed. The manual provided by Starkweather includes information about the rationale, administration, validity, and scoring procedures. The procedures described by Starkweather were modified in that four colors instead of two were used in a single administration and the forms were drawn randomly by the children instead of being presented two at a time in identical shapes.

General Procedures

Both the experimental and control groups entered kindergarten in early September, 1966, and continued until about the first of June. It was not possible to administer the tests of creative thinking initially to the experimental group until January, 1967. A team of six examiners went to the school each Tuesday morning for four weeks, administering two additional tests (Starkweather's Test of Conformity-Nonconformity and her Test of Willingness to Attempt the Difficult) not used in the posttest. The posttesting of both the experimental and controls was accomplished during a one-week period early in May, 1967. Data were available for all 24 of the children in the experimental group and for 39 in the control group.

Results

The data obtained permit us to make two types of comparisons: (1) pretest and posttest measures of the experimental group and (2) posttest measures of the experimentals and the controls. It would have been desirable, of course, to have obtained baseline measures on both the controls and experimentals early in September, 1966. The data obtained permit us to make statements concerning creative growth within the experimentals over a period of about three months and concerning the end-of-the-year functioning of the experimentals compared with the controls.

The data presented in Table I permit us to assess creative growth among the 24 members of the experimental group during the period from late January and early February to early May. The table contains means, standard deviations for the pre- and posttest performances and tests of significance of the differences.

Table 1

Means, Standard Deviations, and Tests of Significance of the Differences Between Pretest and Posttest Performance of the Experimental Group on the Creativity Measures

Measure	January-February Means	S.D.	Early May Means	S.D.	t-ratio	Level Signif.
Verbal Fluency (Mother Goose Problems)	7.27	3.27	10.17	4.19	2.624	< .05
Verbal Flexibility (Mother Goose Problems)	5.18	1.68	7.92	2.53	4.346	< .01
Verbal Originality (Mother Goose Problems)	7.73	6.22	15.92	6.42	4.389	< .01
Figural Fluency (Torrance Tests of Creative Think.)	32.32	5.82	34.92	4.19	1.797	< .10

Continued Table 1

Measure	January-February Means	S.D.	Early May Means	S.D.	t-ratio	Level Signif.
Figural Flexibility (Torrance Tests)	35.12	6.74	37.92	5.84	1.554	> .10
Figural Originality (Torrance Tests)	44.16	9.43	61.58	17.34	4.347	< .01
Figural Elaboration (Torrance Tests)	38.16	8.48	39.67	7.20	0.670	> .10
Figural Total (Torrance Tests)	148.96	25.19	174.08	24.10	3.573	< .01
Originality (Starkweather)	34.88	15.64	36.67	15.24	0.402	> .10

From these results it will be noted that there was substantial and statistically significant growth on the measures of verbal fluency, flexibility, and originality; figural originality; and total figural creativity. No significant growth was expected on the Starkweather Originality Test as the group mean was initially quite close to the ceiling for the test. On the figural test, the experimental subjects sacrificed fluency, flexibility, and elaboration to some extent by their originality. This was especially true in the posttest when many of them combined two or more circles to form quite original forms. For example, one of the most creative children in the class used an entire page of circles to form a spiderweb. Some of the circles were used as egg sacks by the spider. Some of them were used as a part of the spider's body and others were used as a part of the intersecting areas of the web that catch insects. The scoring system permits a bonus for originality as this type of response has been found to characterize highly creative individuals, but it does not permit

an adjustment for fluency, flexibility, and elaboration. All of the differences were in the direction of growth, however, and the total creative energy as reflected by the mean total score shows a statistically significant difference at the one percent level of confidence.

The data provided in Table 2 make possible a comparison of the end-of-the-year functioning of the experimentals and controls. The table includes the means, standard deviations, t-ratios, and level of statistical significance of the differences between the means of the experimentals and controls. It will be noted that all of the verbal and all of the originality measures are of considerable magnitude and are statistically significant. The figural fluency, flexibility, and elaboration measures, however, produce significant differences only at about the ten percent level of confidence. The possible reason for this has already been stated.

Table 2

Means, Standard Deviations, and Tests of Significance of the Differences Between the Experimentals and Controls on the Creativity Measures in Early May

Measure	Experimentals		Controls		t-ratio	Level Signif.
	Means	S.D.	Means	S.D.		
Verbal Fluency (MG)	10.17	4.19	4.28	1.47	6.652	< .01
Verbal Flexibility (MG)	7.92	2.53	4.25	1.46	4.706	< .01
Verbal Originality (MG)	15.92	6.42	4.43	2.40	8.420	< .01
Figural Fluency (TTCT)	34.92	5.82	32.11	7.02	1.975	< .10
Figural Flexibility (TTCT)	37.92	5.84	37.03	8.07	0.503	> .10
Figural Originality (TTCT)	61.58	17.34	43.55	11.66	4.492	< .01
Figural Elaboration (TTCT)	39.67	7.20	36.66	5.43	1.756	> .10
Originality (Starkweather)	36.67	15.24	16.89	16.06	4.900	< .01

Discussion

From the data yielded by this study, it is rather clear that the creative-aesthetic experimental kindergarten group achieved rather significant gains during the three-month period from late January or early February in all of the verbal measures and in all of the originality measures except on the Starkweather Originality Test. The class mean in early February, however, approached the ceiling for the test and was more than twice as great as the mean for the controls even at the end of the year. It is even clearer that the experimentals excelled the controls at the end of the year, especially on the verbal measures and on the originality measures.

It would have been possible to make more clear-cut statements concerning the effects of the creative-aesthetic approach to school readiness on creative development and functioning, if it had been possible to have administered the criterion measures early in September and again late in May both for the experimentals and the controls. In spite of these limitations, it seems quite safe to state that the creative-aesthetic approach does not produce a decrement in creative functioning during the fifth year of life. Instead, it seems safe to conclude that growth occurred. There are also observational indications that there was an intensification of curiosity and interest in creative activities rather than a lessening of them.

Summary

Earlier studies of imagination and creative functioning had seemed to indicate that children experience a discontinuity in their creative development during their fifth year. It was hypothesized that the creative-

aesthetic approach to school readiness as formulated and elaborated by Fortson would result in continued creative growth and functioning. It was also hypothesized that the creative-aesthetic approach would result in a higher level of creative functioning than in kindergarten classes experiencing what might be regarded as a "standard" or "traditional" kindergarten program.

Late in January and early in February, the 24 children in the experimental group were administered Figural Form A of the Torrance Tests of Creative Thinking, Form A of the Mother Goose Problems Test, and the Starkweather Test of Originality. Early in May the 24 children in the experimental group and 39 children in the two control groups were administered Figural Form B of the Torrance Tests of Creative Thinking, Form B of the Mother Goose Problems Test, and the Starkweather Test of Originality.

The results indicated that the experimentals showed statistically significant gains on all three of the verbal measures, figural originality, and total figural creativity. They also showed statistically significant superiority to the control group on all three of the verbal creativity measures and on all of the originality measures.

The major limitations of the study were the failure to test the subjects in both the experimental and control classes early in the school year and the possible bias resulting from the personalities of the two teachers involved. It is recommended that the study be replicated with testing for baseline functioning at the beginning of the school year and near the end of the school year and that at least two classes using the creative-aesthetic approach be studied.

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